very difficult and abstruse subject. The book is divided into three parts: viz. Part I. Researches relating to the Law of Contraction, which contains the well-known papers of Tigerstedt, Grützner, and Hering on this subject; Part II. Researches relating to Secondary Electromotive Phenomena, containing papers by Du Bois-Reymond, Hering, Hermann, and Biedermann; Part III. Researches on the Electrical Phenomena of Certain Electrical Fishes, by Du Bois-Reymond. In addition, a short summary of two or three of the most recently published papers on the subjects treated of in this volume is given in the form of an appendix.

The memoirs selected for translation in Parts I. and II. form a group of papers which are most interesting to all those who are anxious to obtain more than a text-book acquaintance with the difficult questions treated of in them. The translations have been made with great care and accuracy, and with a careful attention to style, though naturally the original German construction is more palpable in some than in others; it would, however, be invidious to select any individual memoirs in this respect. The editor is also to be congratulated upon the manner in which the especially difficult German phraseology inherent to the nature of the subject has been rendered into English. Uniformity of translation among the different translators has been fairly well attained. Perhaps the most noticeable discrepancies are in the translation of the words "*Lücke*" and "*Schwelle*." The phenomenon of the "*Lücke*" is called by one translator the phenomenon of the "gap," and by another the phenomenon of the "hiatus"; of the two, "gap" is perhaps preferable. The almost untranslatable word "*Schwelle*" is sometimes rendered as "limen," at other times as "threshold"; of these two, "limen" sounds best. It is also a pity that the editor has not settled whether the opposite pole to the anode ought to be spelt with a "c" or a "k": cathode and kathode are pretty equally distributed throughout this volume. As to the arrangement of the different memoirs, they all follow each other in natural sequence, with the exception of the second and third papers of Tigerstedt, which ought to have been transposed, as the author assumes in No. 2 that No. 3 has already been read.

Not the least prominent part of the work is the preface, in which the editor briefly links together the various memoirs. As it will seem to many that this should be the most important part of the whole book, it is to be regretted that it is not fuller and also more critical; for undoubtedly any collection of translations of foreign memoirs upon a special biological subject would be very much more valued by English readers if the recognized English authority on that subject prefaced the translations with a critical commentary embodying his own views.

Also, as the object of the book is presumably to enable students and physiologists who do not read German easily to understand the present position of the physiology of nerve and muscle without having to refer to the original papers in the German journals, it would have been better to afford more indication as to the nature of the contents of previous papers which are referred to by the authors but have not been included among the translations. This might have been done by the more copious use of footnotes, or by the translation of one or two more papers. Thus in Biedermann's paper the whole argument is so bound up with his previous papers on the heart of the snail and the muscle of the anodon, that it would have been better to translate the three papers rather than only one. If this had been done, the book would have been large enough without Part III. and there would have been no harm in that, for in the first place the physiology and histology of the electrical organ might well be treated of in a separate volume of memoirs, and in the second place, the papers included in Part III. are all by the same author, and can hardly be considered so important as those in Parts I. and II. Thus Du Bois-Reymond's statement as to "irreciprocal conduction" is based upon an error of observation, according to the recent paper of Gotch in the Proceedings of the Royal Society, and is therefore hardly worthy of a place in these memoirs.

The book is essentially of the nature of an experiment, and it is to be hoped that the demand for it will be sufficient to repay the editor for the time and trouble which he has spent in carrying out his task, and to encourage him to bring out a series of similar volumes dealing with a number of the most important of those biological questions which are the subject of controversy at the present time.

OUR BOOK SHELF.

Examples in the Use of Logarithms. By Joseph Wolstenholme, Sc.D. (London: Macmillan and Co., 1888.)
Practical Logarithms and Trigonometry. By J. H. Palmer. (London: Macmillan and Co., 1888.)

THESE are two books for the use of mathematical students from the hands of practical teachers, who may be assumed to be well acquainted with the difficulties met with by students.

The first one consists entirely of rules and their application to examples. The earliest examples are on the extraction of logarithms from tables. Then follow the reductions of $\sqrt{a^2 + b^2}$ and $\sqrt{b^2 + c^2 - 2bc \cos A}$, after which come the various solutions of triangles, finally concluding with a lengthy series of examples on the calculation of the parts of tetrahedra when the sides are given. The author's experience has indicated that examples of the latter class are especially useful in teaching the habitual accuracy which it is desirable to attain, and another reason for their introduction is that they afford preliminary practice in the solution of spherical triangles. Such, then, is the first book, and no one will contradict us when we remark that a student who carefully works out the examples given cannot fail to become perfectly familiar with logarithms and their applications.

The range of the other book is a little wider. Beginning with involution and evolution treated arithmetically, and following with geometrical and trigonometrical definitions, the author leads to logarithms and their simpler applications. The aim of the book is to give a thorough practical knowledge of the use of logarithms and the solution of plane triangles and problems in trigonometry. The general plan adopted is first to state a rule, give worked examples, and then to give a number of exercises on each rule, which may be tested by the answers given.

The omission of the proofs of the rules and formulæ renders the book liable to be looked upon as a cram book, but it is apparently intended mainly for the use of those who simply wish to know how to use logarithms

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and trigonometry, and to whom proof is of secondary importance.

The exercises given will make both books specially valuable to teachers, for the working of numerous examples is indispensable in the teaching of mathematical subjects.

Elementary Statics. By the Rev. J. B. Lock, M.A. (London: Macmillan and Co., 1888.)

WE gladly welcome another addition to Mr. Lock's excellent series of text-books. To the new terms already introduced by him, another is now added. This is the term "resolute" as a substitution for "resolved part," the argument for the change being that "the idea is so important in the subject that a definite *name* will be found useful." Those who have already become familiar with the older expressions may not be willing to accept the changes, but there can be no doubt that the new expressions are appropriate, and will be of great service to beginners.

The treatment adopted is based upon Newton's laws of motion, the author's opinion being—and we quite agree with him—that this greatly simplifies the subject. The parallelogram of forces is assumed, the student being recommended to postpone the proof until he commences his study of dynamics. The working of examples, as every teacher knows, is the only way to obtain a thorough knowledge of any subject which requires mathematical treatment, and Mr. Lock has fully recognized the importance of this. Typical examples, excellently selected, are worked out at full length, and numerous others are given as exercises. There is also a selection of papers from some of the Oxford and Cambridge examinations. A new departure is the introduction of a short chapter on graphic statics, which we highly approve of. The teaching of this subject has made rapid strides during the last few years, and the methods are so simple, and applicable in cases which would involve laborious calculations, that the introduction of the subject into text-books is very desirable.

The whole subject is made interesting from beginning to end, and the proofs of the various propositions are very simple and clear. We have no doubt that the book will be appreciated by all who have an opportunity of judging of its merits.

Catalogue of the Fossil Reptilia and Amphibia in the British Museum (Natural History). Part I., containing the Orders Ornithosauria, Crocodilia, Dinosauria, Squamata, Rhynchocephalia, and Proterosauria. By Richard Lydekker, B.A., F.G.S., &c. (London: Printed by order of the Trustees, 1888.)

THIS work forms a very valuable addition to the series of British Museum Catalogues, and will be welcomed by all palæontologists as giving a full and complete account of the specimens of fossil reptiles in the National Collection, many of which have an especial interest as being the "type-specimens" on which so many classical monographs have been based.

Mr. Lydekker adopts, with some alterations, the classification proposed in 1885 by Cope, with the modifications recently suggested by Baur. The reasons for the changes he has introduced are fully discussed in the introduction.

Full descriptions of the orders, families, genera, and species, are given in most cases, and the book is illustrated by sixty-nine woodcuts, many of which are taken from the works of Marsh, Dollo, and others. The introduction of the names of many of the larger groups which are not represented in the British Museum collection renders the work more complete, and the addition of so much descriptive matter, and of copious references to the bibliography of the subject, also increases its value far beyond that of an ordinary Catalogue.

The History of Australian Exploration. By Ernest Favenc. (Sydney: Turner and Henderson, 1888.)

THE author of this volume does not profess to give a complete history of the exploration of Australia. Much of the work of exploration has been done by private travellers and adventurers; and it is of course impossible that their labours can ever be adequately recorded. For the fulfilment of such a task the co-operation of hundreds of old colonists would be necessary; and the work, when completed, would not only fill many volumes, but, as Mr. Favenc says, would prove most monotonous reading. He has therefore confined his attention to public expeditions, dividing his subject into two distinct parts—land exploration and maritime exploration. His narrative covers a period of one hundred years—from 1788 to 1888. The book is issued under the auspices of the Governments of the Australian Colonies, and it is in every way worthy of this distinction. Mr. Favenc has invariably gone to the best sources for information, and has produced a record which is not only trustworthy, but full of interest. The value of the book is considerably increased by several maps and facsimiles.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Protest in *The Nineteenth Century.*

THE present age is eminently a sensational one. Everybody deals in superlatives and universals. Morning and evening the newspaper bills vie with each other in appealing to that particular form of curiosity which feeds upon alarms. Our civilization is declared to be altogether wrong. Dr. Pangloss's doctrine is reversed—nothing that is is right. We are incessantly invited to take stock of our arrangements political and social, and treated to denouncements of almost every detail of them. We are too serious, too frivolous, a prey to panics, stolidly blind to dangers, distrustful, credulous. To crown all, what was fondly supposed to be one of the greatest of modern improvements is roundly declared to be a sham; to be worse—a lure to destruction, mental and physical. Loud were the pæans sung some forty years ago over the then new system of competitive examinations which so vexed the soul of the author of "Gryll Grange." Now we are assured that the whole examinational system is utterly stupid, and, in effect, that it were better at once ended than in any way mended.

But literary rhetoric, however brilliant, in these days produces but a momentary impression. We have so much of it that we have come to regard it with the contempt bred of overfamiliarity. After the first shock of delight or astonishment has passed off, we begin to look for the facts and criticize the logic. Sweeping phrases, sounding invective, the vigorous style in general, cease to convince. There is too much of the scientific spirit abroad for the roar of the old lions or of the young lions to cause more than a passing alarm. Denunciation is always easy, though not, of course, of the forcible and brilliant kind with which Prof. Freeman and Prof. Harrison have made us familiar, perhaps a thought too familiar. I shall look forward with interest, and with the certainty of some instruction, to the statement which will, no doubt, be forthcoming of the facts the *Nineteenth Century's* protest is based upon, but as a competitive examinationist I look forward to it without anxiety.

Meanwhile, I venture to offer one or two remarks upon a single sentence in the protest. "Again and again," it is said (p. 620), "brilliant young men once full of early promise go down from the Universities as the great prize-winners, and do little or nothing in the after years." The reason, it is added, is that "they have lost their mental life before they are five-and-twenty"; in other words, that the examinational system, *quâ* examinational, has killed in them the love of knowledge by that age—a sad fact enough, if true.

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